Space Weather Forecast

Issued on Saturday, 03 June 2023 at 13:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares with a risk of Minor-Moderate radio blackouts throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low with only Common-class flares observed. There are a couple of large regions on the visible disc, one in the northeast which, although magnetically complex, has remained relatively inactive. The other large region in the southwest appears to have matured and has also shown limited activity. The remaining regions mostly appear relatively small, simple or stable. No Earth-directed coronal mass ejections (CMEs) have been observed on available imagery. However, several recent small CMEs, and a filament lift-off from the southeast of the disc are yet to be analysed.

Solar Wind / Geomagnetic Activity: Solar winds have remained at slow-ambient levels around 330-370km/s. Total magnetic field strength was weak, with the important north-south component also varying weakly. Geomagnetic activity was Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to remain Low to Moderate through the period, with the greatest risk of Moderate-Class flares from two of the larger and more complex regions on the disc, one in the southeast and one in the southwest of the visible disc. There is a low risk of High activity being reached, especially from the complex southeastern region.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs are currently expected in the forecast period. Solar wind speeds are forecast to remain largely at slow-ambient levels, but with a possibility of connecting to a fast solar wind on Days 1-2 (03-04 June) which may see speeds reach slightly elevated levels of 400-450 km/s. Mainly Quiet to Unsettled geomagnetic activity expected, with a very slight chance of Active or G1/Minor Storm intervals Days 1-2.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is an ongoing slight chance of reaching the S1/Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	55	55	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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